



Architecture design and prototype implementation that integrate the processes of the Laboratory of Geotechnics and Construction materials

Departamento de Ingeniería de Sistemas, Universidad del Norte

Students: Adonay Santiago Espinosa Montaña, adonaye@uninorte.edu.co
Cristian David Suárez Reina, cdsuarez@uninorte.edu.co

Tutors: Pedro Mario Wightman Rojas,
Luis Alberto Villadiego Carcamo

The Laboratory of Geotechnics and Construction Materials carries out its technical testing processes, applying a series of technical provisions documented and based on recognized technical standards that are effectively applied by technical and support staff. In addition, the quality these processes must follow the ISO 17025 standard.

Therefore, the laboratory requires an information system that integrate the processes of sample reception, inventory management, equipment control, storage and data processing, preparation of calculations and final reports in order to achieve access, search and processing in a faster way.

The central proposal is to design the complete architecture of the system that allows to implement some of the processes of the laboratory within a prototype that contains the module of dynamic forms creation. These forms would allow to manage the data of the forms actually used by the laboratory. Currently the forms are implemented in spreadsheets (Excel type) which data of the test is handled, sample reception, internal orders, among others. What is expected is that the laboratory administrator can upload the forms to the platform without the need of a developer. This module will be designed under one of the proposed architectures as a functional guide for the development of the application.

The planning and development of the project was carried out with a spiral methodology based on prototypes. This development methodology has a high design component since each cycle must: determine objectives, risk analysis, planning, and finally development and testing. It is based on prototypes since each module is implemented, tested and then integrated into a functional prototype, mainly focused on the dynamic forms module and the inputs of these.